

# The Burden of Cervical Cancer

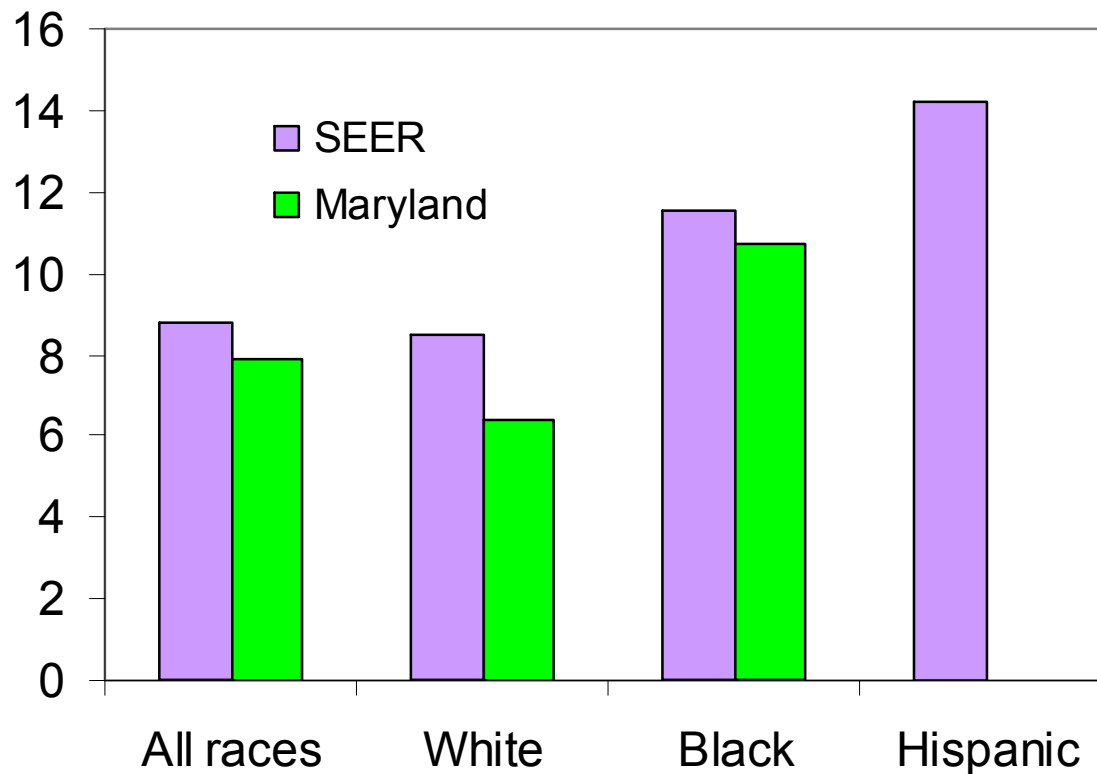
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# Cervical cancer in Maryland

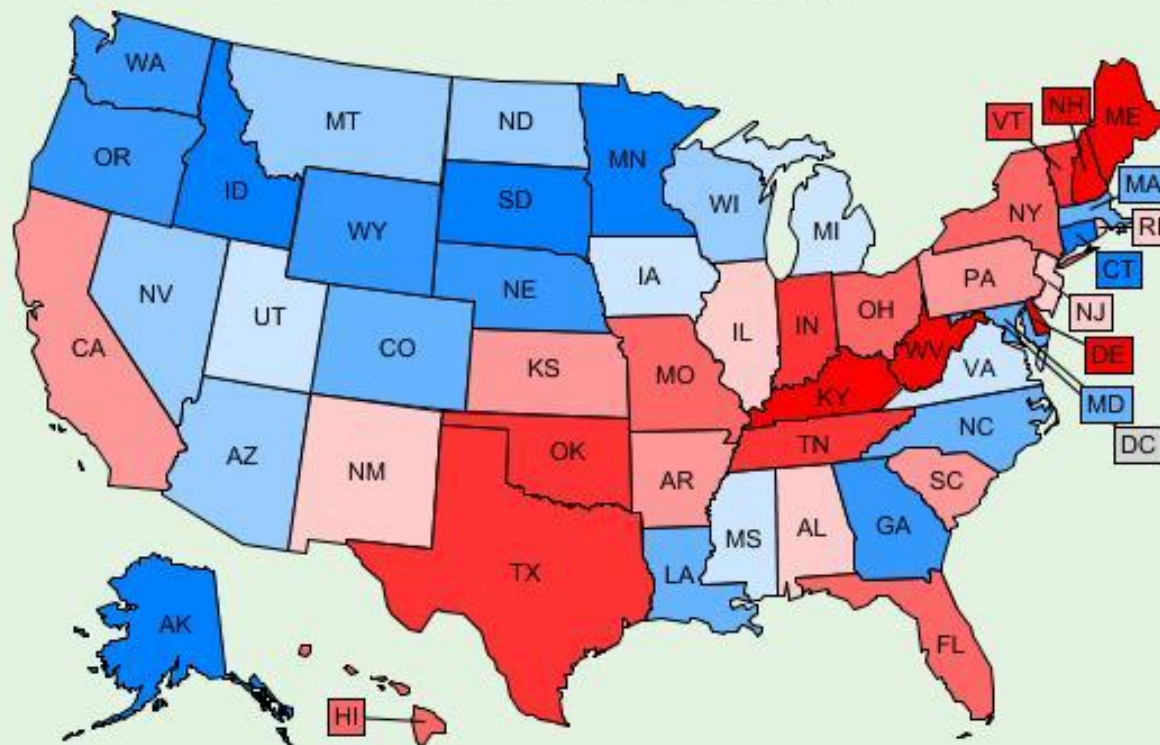
- 226 incident cases & 66 deaths (2000)
  - 11,846 cases and 5,049 deaths all cancers
- 7.9 per 100,000 incidence rate
  - 6.4 whites, 10.7 blacks
- 2.3 per 100,000 mortality rate
  - Breast cancer incidence rate 131 per 100,000

# USA: 12,000 cases and 4000 deaths/year

**Cervical cancer incidence rates for 2000  
(ASR per 100,000)**



**Cancer mortality rates by state (age-adjusted 1970 US population)**  
**Cervix uteri: white females, 1990 to 1994, all ages**

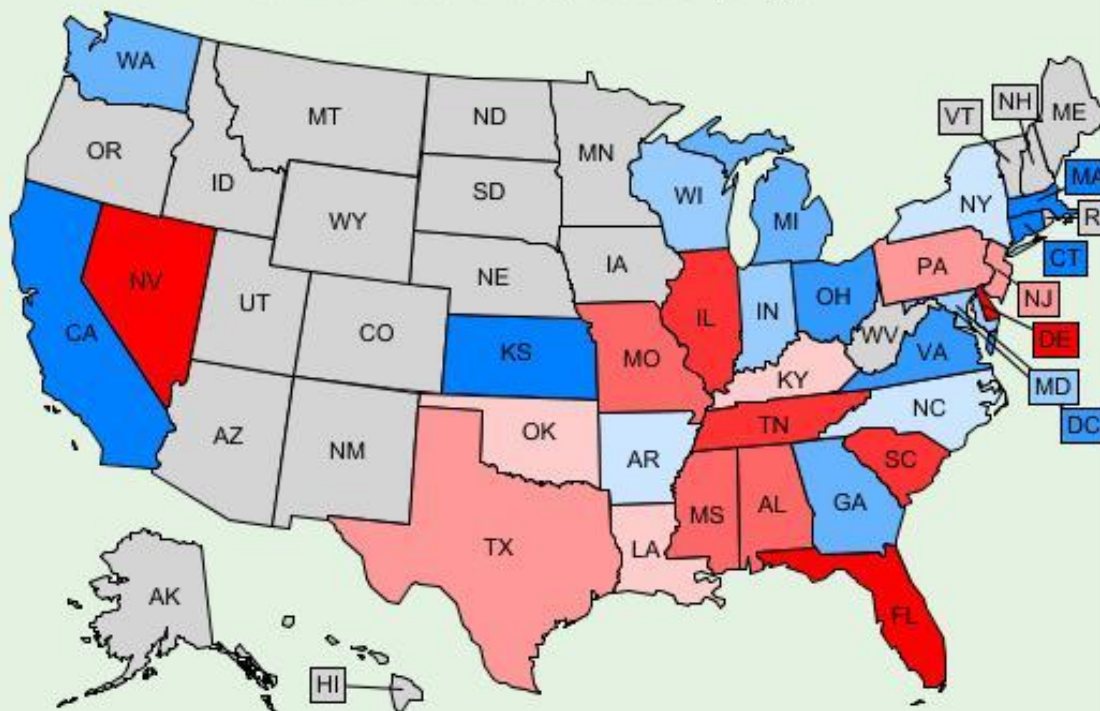


Rates per 100,000 person-years,  
1990 to 1994

- 3.18 - 3.66 (5; 10.0%)
- 2.87 - 3.18 (5; 10.0%)
- 2.64 - 2.87 (5; 10.0%)
- 2.57 - 2.64 (5; 10.0%)
- 2.44 - 2.57 (5; 10.0%)
- 2.36 - 2.44 (5; 10.0%)
- 2.25 - 2.36 (5; 10.0%)
- 2.08 - 2.25 (5; 10.0%)
- 1.87 - 2.08 (5; 10.0%)
- 1.46 - 1.87 (5; 10.0%)
- Sparse data (1)

Mortality rate		Confidence interval	No. of deaths
US	2.51	2.47 - 2.55	17,272

**Cancer mortality rates by state (age-adjusted 1970 US population)**  
**Cervix uteri: black females, 1990 to 1994, all ages**



Rates per 100,000 person-years,  
1990 to 1994

- 8.12 - 8.59 (3; 9.7%)
- 7.61 - 8.12 (3; 9.7%)
- 7.19 - 7.61 (3; 9.7%)
- 6.70 - 7.19 (3; 9.7%)
- 6.48 - 6.70 (3; 9.7%)
- 6.08 - 6.48 (3; 9.7%)
- 5.83 - 6.08 (3; 9.7%)
- 5.22 - 5.83 (3; 9.7%)
- 5.00 - 5.22 (3; 9.7%)
- 4.31 - 5.00 (4; 12.9%)
- Sparse data (20)

Mortality rate		Confidence interval	No. of deaths
US	6.30	6.12 - 6.48	4,989

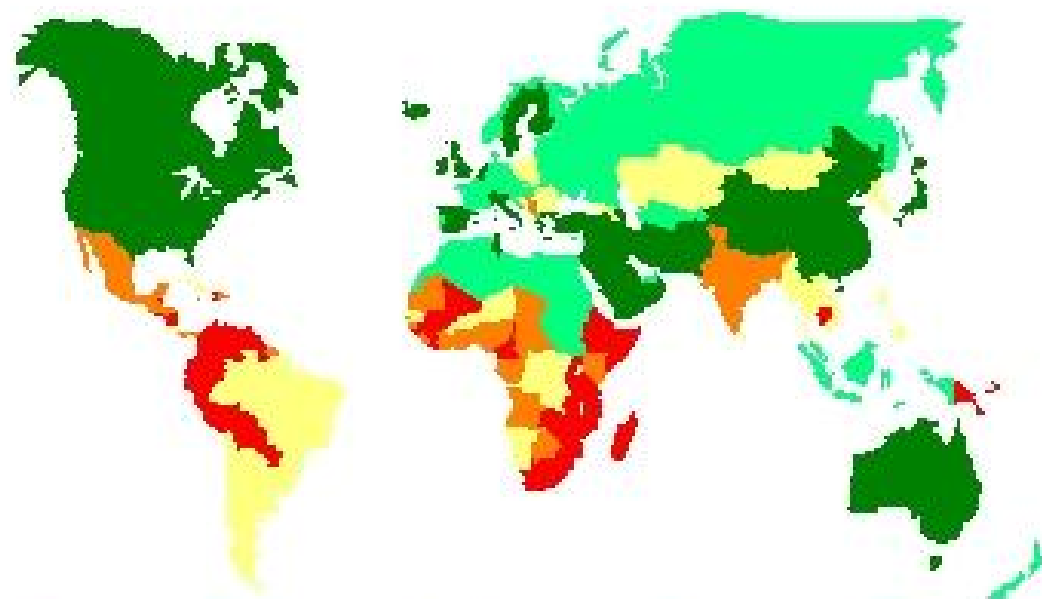


# Ranking of cervical cancer in the USA

- 6<sup>th</sup> most common cancer in Black and Hispanics
- 9<sup>th</sup> most common cancer in Asian/Pacific Islanders
- 10<sup>th</sup> most common cancer in American Indian/Alaskan Native women
- >10<sup>th</sup> in White women

# Worldwide: 500,000 cases & 270,000 deaths/year

Incidence of Cervix uteri cancer: ASR (World) (All ages)



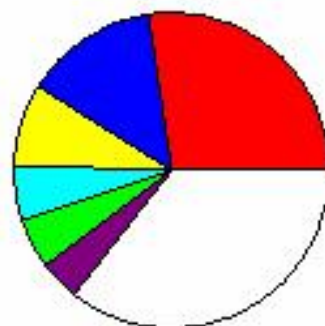
■ < 9.3    ■ < 16.2    ■ < 26.2    ■ < 32.6    ■ < 87.3

GLOBOCAN 2002

### More developed countries-Female (All ages)

Cases: 2317939

636128 (27.4%)	Breast
312341 (13.5%)	Colon and rectum
194731 (8.4%)	Lung
136329 (5.9%)	Corpus uteri
115372 (5.0%)	Stomach
96769 (4.2%)	Ovary etc.
826269 (35.6%)	Other cancers

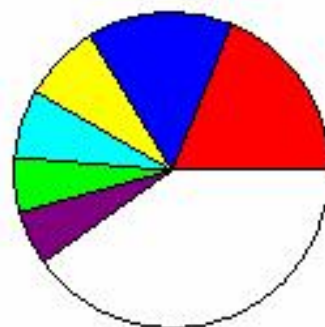


GLOBOCAN 2002

### Less developed countries-Female (All ages)

Cases: 2735386

514072 (18.8%)	Breast
409404 (15.0%)	Cervix uteri
214024 (7.8%)	Stomach
191192 (7.0%)	Lung
159664 (5.8%)	Colon and rectum
147183 (5.4%)	Liver
1099847 (40.2%)	Other cancers



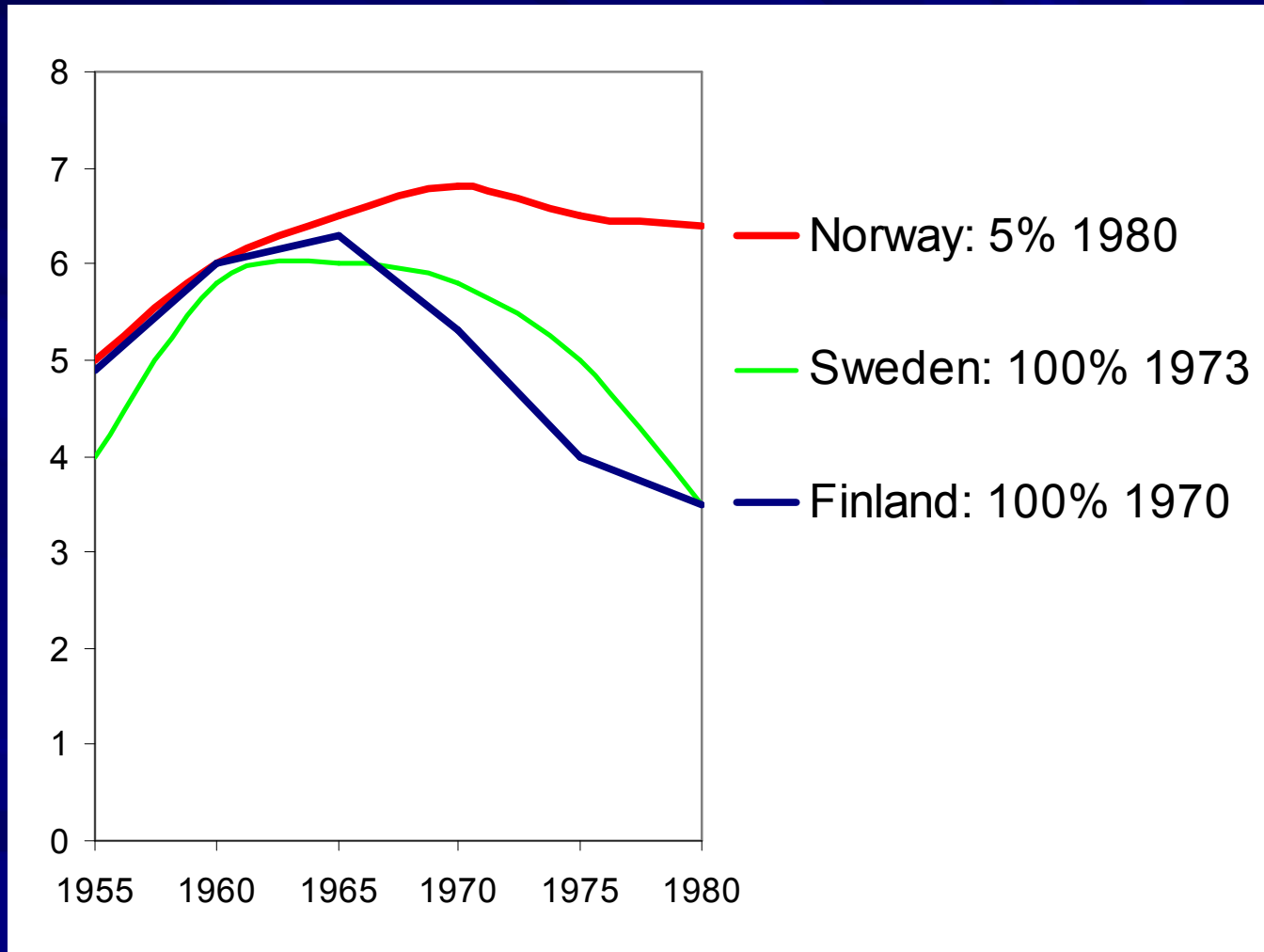
GLOBOCAN 2002



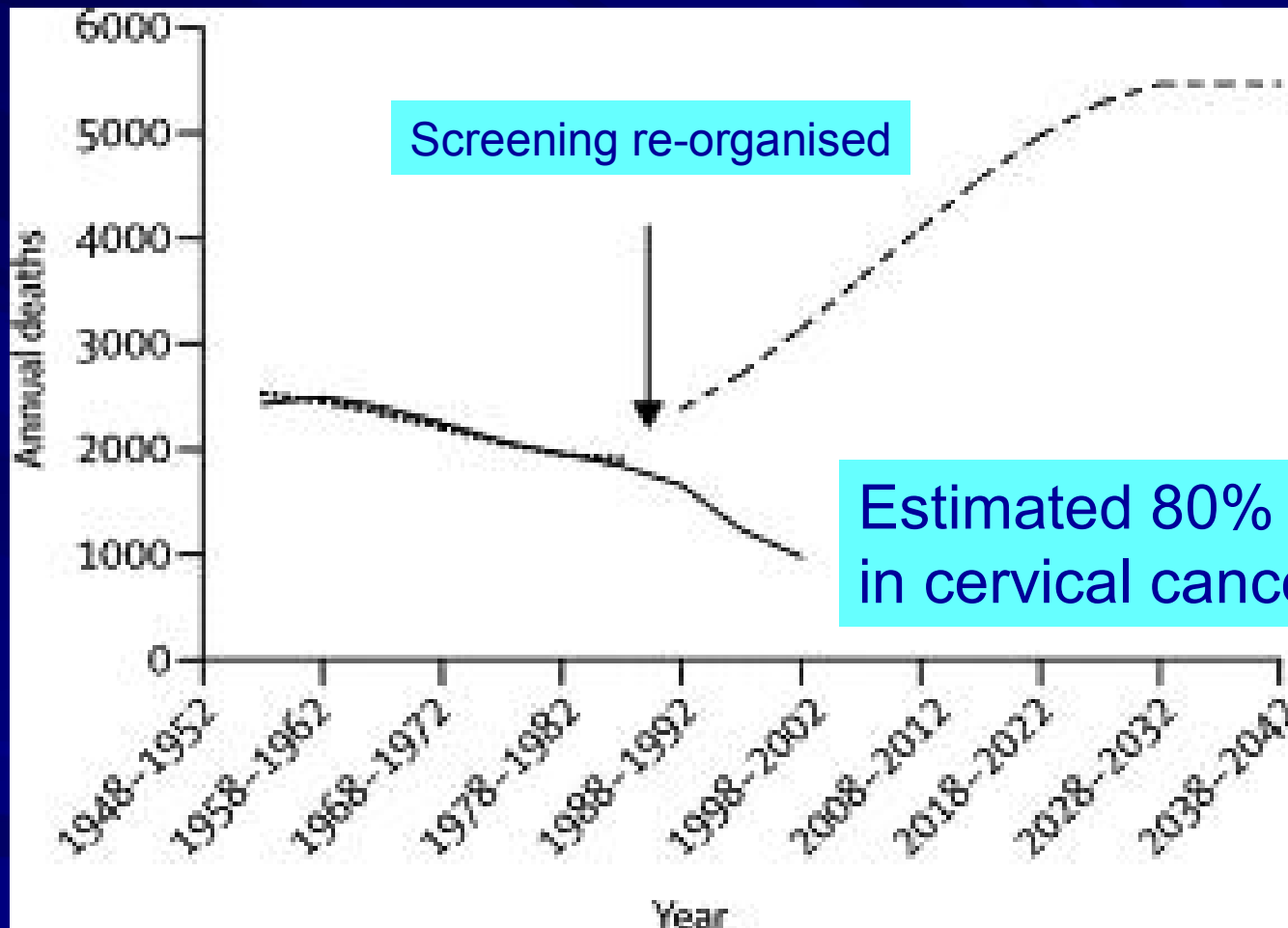
# How do we explain the variation?

- Cervical cancer screening
  - Pap smear widely introduced in 1960s
- Detects disease at pre-cancerous stage
  - Prevents cancer incidence as well as mortality

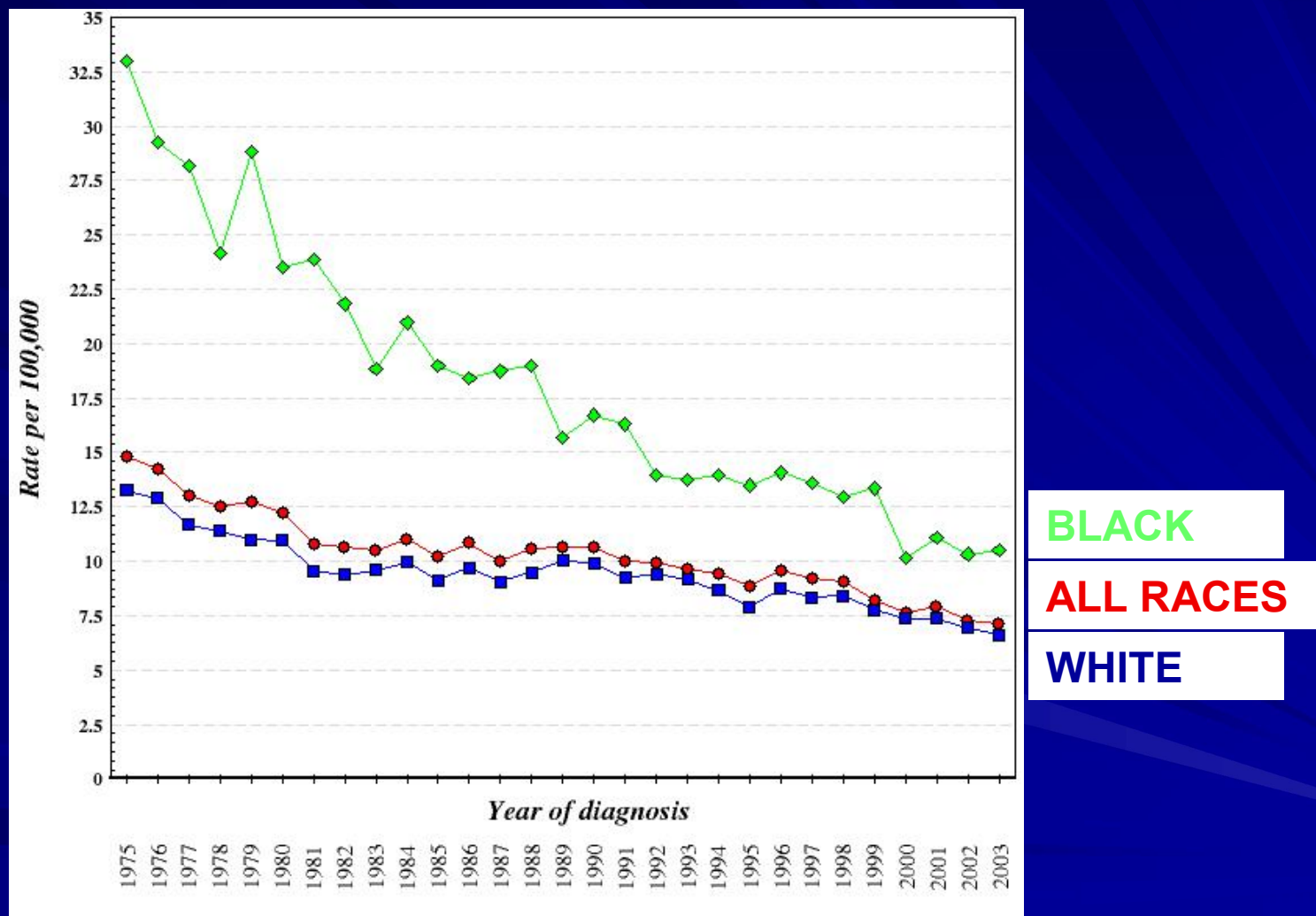
# Cervical cancer mortality in Scandinavia (rate per 100,000)



# Projected UK cervical cancer mortality - without screening

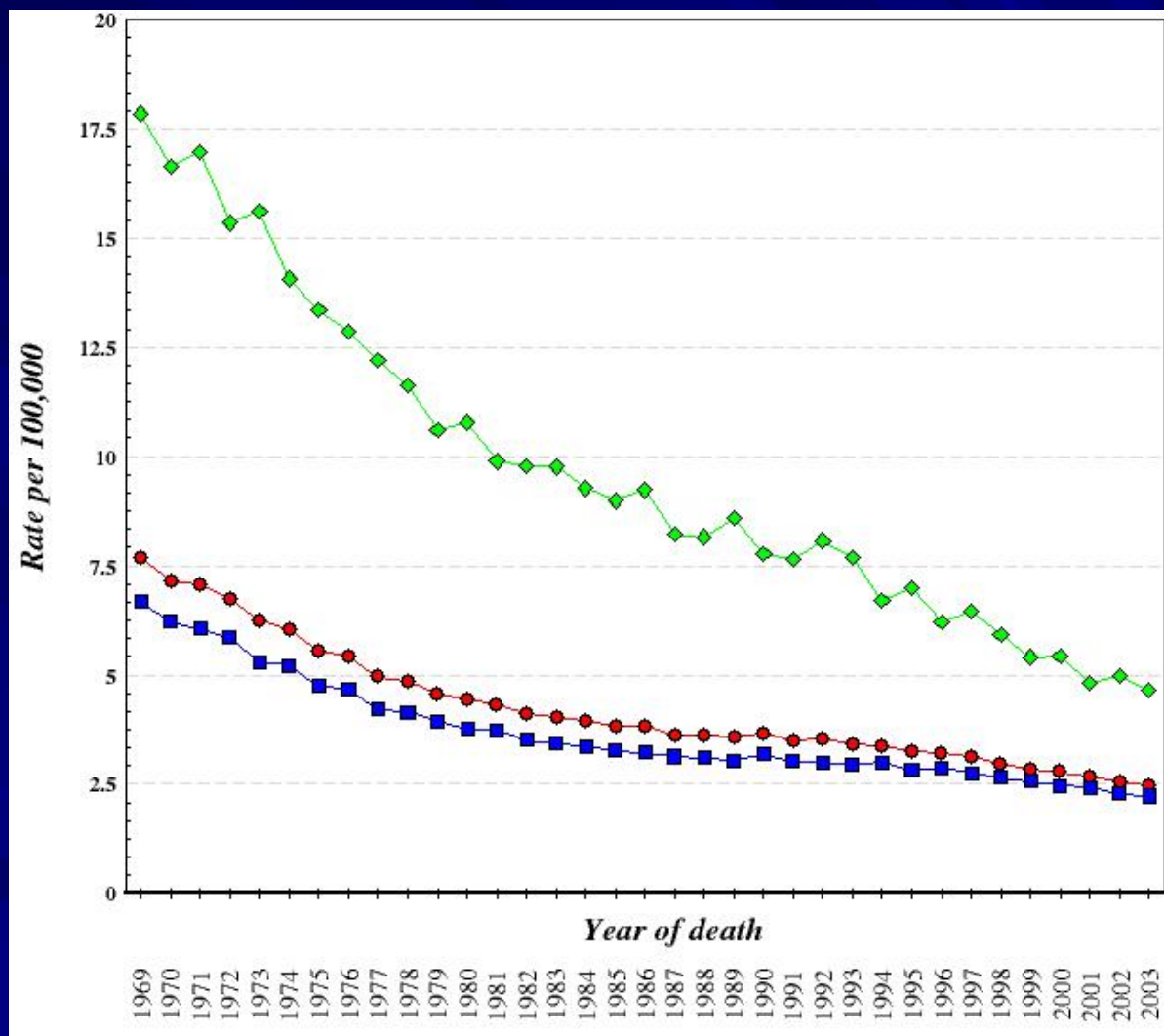


# USA: trends in cervical cancer incidence



Source: SEER cancer registries.

# USA: trends in cervical cancer mortality



BLACK

ALL RACES

WHITE

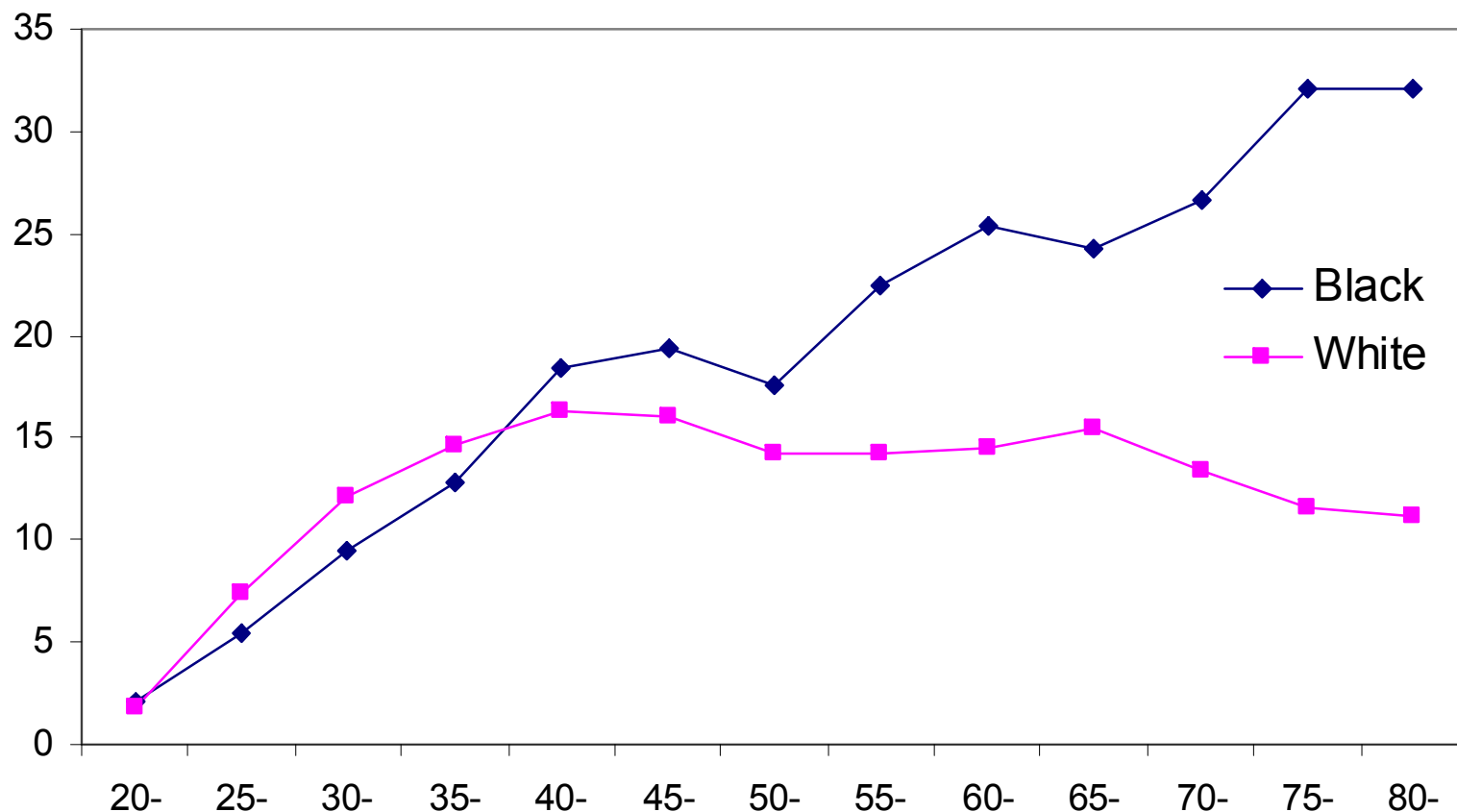
Source: SEER cancer registries

# At what cost?

- USA - \$4-5 billion per year
- 5 million abnormal smear results
- Diagnosis and treatment of 700,000 cases of CIN 2-3



## Age-specific cervical cancer incidence rate (per 100,000)



Source: SEER cancer registries

# Less developed countries?

- Pap smear screening not feasible
  - Infrastructure
    - Follow-up
    - Training
    - Lab facilities
    - Treatment
- Screen and treat?
  - Visual inspection methods

# HPV and cervical cancer

- HPV necessary cause of cervical cancer
  - Detected in 99.7% of tumours
- High risk types - cause cervical cancer
  - e.g. 16,18
- Low risk types - cause genital warts
  - e.g. 6,11

# HPV prevalence worldwide

- Most prevalent STD worldwide
  - Highly transmissible
- >50% lifetime risk of infection
  - Most infections clear within 6-12 months
- Prevalence in young women similar worldwide
  - Costa Rica < age 25 = 37%
  - USA 18-25 year olds = 33%
- Global study of 10,000 women with cervical cancer
  - 50% reported 1 sexual partner, 70% reported 1-2

# Summary

- Cervical cancer relatively rare disease in more developed countries (eg USA)
  - Costs of screening and treating low grade disease?
  - Higher rates still in under-served populations
- 2<sup>nd</sup> most common cancer in less developed countries
  - Pap smear screening not feasible
  - **An affordable, effective vaccine is essential**